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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/523,735	03/13/2000	Yasuyuki Unno	684.2700CIP	7033

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EXAMINER

KIM, PETER B

ART UNIT	PAPER NUMBER
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2851

DATE MAILED: 02/28/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.		Applicant(s)	
	09/523,735		UNNO, YASUYUKI	
	Examiner		Art Unit	
	Peter B Kim		2851	

-- The MAILING DATE of this communication appears on the cover sheet with the corresponding address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on 08 January 2002.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 11-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 11-29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All   b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☒ Certified copies of the priority documents have been received in Application No. 09/123,443.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                  | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____                                    |

### DETAILED ACTION

Applicant's arguments filed on Jan. 8, 2002 (Paper #8) have been fully considered.

#### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 11-13 are rejected under 35 U.S.C. 102(b) as being anticipated by Moslehi (5,040,896).

Moslehi discloses in the abstract and Figure 2, a projection optical system with a plurality of optical elements and correcting means for correcting birefringence of the optical elements. Moslehi discloses in the abstract the method of compensating the birefringence by opposite and equal changes in the other optical elements.

#### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made

5. Claims 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moslehi in view of Tatsuno et al. (Tatsuno).

Moslehi discloses the claimed invention as discussed above, however, Moslehi does not disclose the use of a diffraction grating to produce form birefringence. Tatsuno discloses in column 1, line 61 through column 5, 38, the use of a diffraction grating on the surface of the optical element to produce birefringence and correct aberration. Although, Tatsuno does not explicitly state that the period of grating is not greater than the wavelength of the light, it is well known in the art that in order to obtain diffractive light of only zero-th order, the period has to be no greater than the wavelength. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide the diffraction grating to Moslehi in view of Tatsuno in order to provide birefringence and correct aberration.

6. Claims 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moslehi in view of Sutton et al. (Sutton).

Moslehi discloses the claimed invention as disclosed above, however, Moslehi does not disclose the use of a predetermined stress distribution to produce form birefringence. As indicated by Sutton in column 1, line 49 through column 3, line 63, it is well known in the art that a predetermined stress distribution in an optical element is also an effective means of producing form birefringence. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide the stress distribution in the optical elements to Moslehi in view of Sutton in order to provide form birefringence and correct aberration.

7. Claims 18-21 and 26-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al. (Kim) (6,057,970) in view of Moslehi.

Kim discloses in Figure 3 and column 4, a projection exposure apparatus of scanning type with an illumination system and a projection optical system with a birefringent member (200). Although Kim does not disclose explicitly the slit-like light and the speed ratio, such features are well known features of a scanner. However, Kim does not disclose the birefringence correcting element for correcting birefringence of the projection optical system. Moslehi discloses in the abstract and Figure 2, a projection optical system with a plurality of optical elements and correcting means for correcting birefringence of the optical elements. Moslehi discloses in the abstract the method of compensating the birefringence by opposite and equal changes in the other optical elements. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide the correcting element of the Moslehi to the invention of Kim in order to obtain wafer with a high resolution.

8. Claims 22, 23 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim in view of Moslehi as applied to claim 18 above, and further in view of Tatsuno et al. (Tatsuno).

The further difference between the claimed invention and the modified Kim is the use of a diffraction grating to produce form birefringence. Tatsuno discloses in column 1, line 61 through column 5, 38, the use of a diffraction grating on the surface of the optical element to produce birefringence and correct aberration. Although, Tatsuno does not explicitly state that the period of grating is not greater than the wavelength of the light, it is well known in the art that in order to obtain diffractive light of only zero-th order, the period has to be no greater than the wavelength. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made

to provide the diffraction grating to Kim in view of Tatsuno in order to provide birefringence and correct aberration.

9. Claims 24, 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim in view of Moslehi as applied to claim 1 above, and further in view of Sutton et al. (Sutton).

The further difference between the claimed invention and the modified Kim is the use of a predetermined stress distribution to produce form birefringence. As indicated by Sutton in column 1, line 49 through column 3, line 63, it is well known in the art that a predetermined stress distribution in an optical element is also an effective means of producing form birefringence. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide the stress distribution in the optical elements to Kim in view of Sutton in order to provide form birefringence and correct aberration.

#### ***Remarks***

10. Applicant argues that Moslehi does not disclose the method of correcting birefringence as disclosed in the claimed invention, but the abstract of Moslehi indicates that Moslehi discloses the method of compensating the birefringence by opposite and equal changes in the other optical elements.

#### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter Kim whose telephone number is (703) 305-0105. The examiner can normally be reached on Monday-Thursday from 6:30 AM to 4:00 PM. The examiner can also be reached on alternate Fridays during the same hours.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Russ Adams, can be reached on (703) 308-2847. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0956.

PBK  
PBK

02/21/02

  
RUSSELL ADAMS  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800